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Human Processes

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The $650 Billion Problem

Three major market forces are paving the way for a step change in collaborative knowledge work:

1. **Market globalization is forcing commercial companies to "compete smarter."**
   To keep customers loyal, companies must add value by improving "the searching, monitoring, and coordinating required to manage the exchange of goods and services."

2. **Reduction in labor demand is forcing knowledge workers to "work smarter."**
   To keep their jobs, knowledge workers must quantify their output – commoditize knowledge work in order to stay in the game.

3. **Worldwide recession is forcing organizations to "cut costs smarter."**
   Routinized work is already being standardized and automated: Knowledge work is where new cost savings are to be found.

In this article I will describe these forces, and how a new approach to BPM is required to deal with them. I will illustrate this by discussing one of the most acute pain points for knowledge workers today – the lack of space to think.

Market globalization

As high-speed Internet access becomes ubiquitous, every organization offering goods and services for sale must compete with suppliers from around the globe.

Further, the Internet not only facilitates supply, it also facilitates price comparison. Hence, it is becoming ever easier for customers to become fickle and switch suppliers continually in search of ever lower prices. Eventually, even suppliers in developing countries will start to feel the price pressure.

To avoid a downward price spiral, and stay in business with an acceptable level of risk, commercial companies must find a new way to compete. Like the analyst firm McKinsey, I believe that this lies in finding ways to improve collaborative knowledge work, which they term "tacit interactions":

> *In today's developed economies, the significant nuances in employment concern interactions: the searching, monitoring, and coordinating required to manage the exchange of goods and services. Since 1997, extensive McKinsey research on jobs in many industries has revealed that globalization, specialization, and new technologies are making interactions far more pervasive in developed economies. Currently, jobs that involve participating in interactions rather than extracting raw materials or making finished goods account for more than 80 percent of all employment in the United States. And jobs involving the most complex type of interactions – those requiring employees to analyze information, grapple with ambiguity, and solve problems – make up the fastest-growing segment.*

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> *This shift toward more complex interactions has dramatic implications for how companies organize and operate ...*
>
> *The shift from transactional to tacit interactions requires companies to think differently about how to improve performance – and about their technology investments. Moreover, the rise of tacit occupations opens up the possibility that companies can again create capabilities and advantages that rivals can't easily duplicate.*
>
> "The next revolution in interactions," The McKinsey Quarterly, 2005 Number 4

However, mainstream work support tools (all forms of workflow, including Business Process Management Systems) offer little to support knowledge workers. This is because all such tools are based on *defining then joining up tasks* – first do this, then do that. Sometimes more than one stream of activity may go on at the same time. Usually there are conditions that govern exactly which tasks are carried out, and in what order.

This approach is valid only for work that is repetitive and often semi-automated, work in which people (if involved at all) are restricted to data entry and low-level decision-making. For example:

- Compliance testing
- Facilities construction
- New product release
- Component sourcing
- Assembly line
- Logistics
- Invoicing
- Settlement
- Returns
- Stock level maintenance
- Purchase order approval
- Payroll
- Stock trading

Knowledge work, however, is a different kettle of fish. Knowledge work has underpinning structure, but cannot be defined in advance and repeated mechanically. Rather, each work stream is dependent on continued negotiation with colleagues, since information must be assembled and verified by various means, actions taken must be sensitive to the business environment, plans are repeatedly changed mid-stream, and so on:

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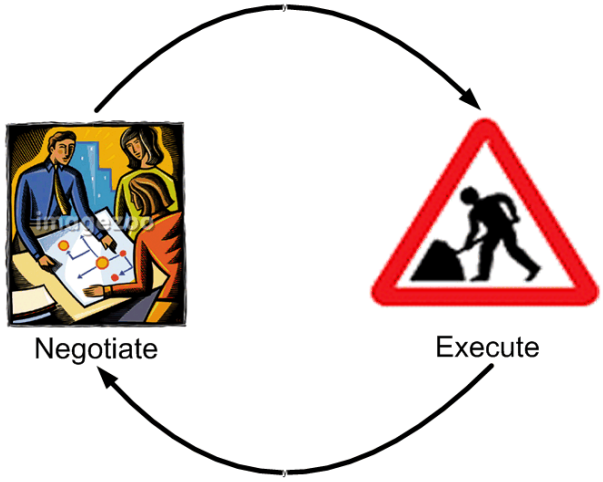

Figure 1. The Negotiate-Execute Loop

Common activities typical of knowledge work, and that cannot be supported by workflow tools, include

- Research
- Product/service design
- Marketing
- Sales
- Customer support
- Working with partners
- Managing organizational change
- Mergers and acquisitions
- Running teams
- Auditing
- Healthcare provision
- Software development
- Service-Oriented Architecture (SOA) governance
- Strategy/policy implementation
- Negotiation
- Disaster, problem or issue resolution

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- Campaign management
- Crime solving
- Taking legal or military action
- Construction
- Catering
- Anything else where humans interact to create and innovate solutions

These types of business process are known as "human-driven," to distinguish them from the "human-centric" processes supported by mainstream BPM and workflow tools. Use of the word **driven** indicates that the humans engaged in such processes must participate in definition of their own activities, rather than slavishly carry out a pre-defined set of tasks.

As organizations struggle to combat market globalization by improving the way they do knowledge work, they are finding that workflow and BPM software does not meet their needs. The emails below are typical of the many I receive from corporations struggling with the application of "human-centric" BPM tools to knowledge work:

> *We want systems that allow better collaboration, easier metric tracking, and allow the processes to exist without dominating the human interaction of our employees as they work to deal with the highly dynamic project environment. We want to focus on the WORK and its outcomes, not work to support the "process."*
>
> *We are a developer of enterprise systems and capabilities for the XXX government. We [need] a more practical and useful solution to "'workflow" in an enterprise sense. We have had numerous conceptual problems with existing BPM tools and we're looking for alternatives.*

Reduction in labor demand

Low-cost outsourcing to developing countries, coupled with increasing workplace automation via software technology, are reducing the need for human labor in many organizations.

This does not just apply to blue-collar work. Mainstream adoption of software tools for enterprise administration, customer relationship management, and business intelligence mean that it is now straightforward to outsource white-collar work, and in some cases semi-automate it.

Hence, knowledge workers are facing a massive reduction in demand for their services. This means that knowledge work will become a buyers' market. To keep their jobs, knowledge workers will not only have to become much more effective, but also quantify their output. Knowledge workers will have to "work smarter."

In effect, the same change is required in knowledge work that the Industrial Revolution brought to production and the Computing Revolution brought to transaction handling – it must be structured and standardized. As Andy Grove predicts, knowledge work will inevitably become commoditized:

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> *Although mainstream economic thought holds that America's history of creativity and entrepreneurialism will allow it to adapt to the rise of such emerging economies as India and China, I think that is so much wishful thinking. Globalization will not only finish off what's left of American manufacturing, but will turn so-called knowledge workers, which were supposed to be America's competitive advantage, into just another global commodity.*
>
> Andy Grove, co-founder of Intel Corporation and author of "Only the Paranoid Survive"

At present, however, this is far from the case. Every knowledge worker carries out his or her work differently, with the result that knowledge work is generally very inefficient. A typical symptom is information overload. In September 2005, the research group Basex estimated that interruptions from *"many sources, including instant messaging, spam e-mail, telephone calls, and the Web"* result in *"28 billion lost man-hours per annum in the United States."*[1] In September 2007, Basex quantified the financial impact of information overload on US companies as $650 billion per annum:

> *Information is the new currency of our society yet workers are drowning in information. A typical worker gets 200 e-mails, dozens of instant messages, multiple phone calls (office phone and mobile phone), and several text messages, not to mention the vast amount of content that he/she has to contend with.*
>
> *Information overload has become a significant problem for companies of all sizes, with some large organizations losing billions of dollars each year in lower productivity and hampered innovation. Interruptions alone cost companies in the U.S. $650 billion per year.*
>
> *It's not just a case of too much e-mail, too many interruptions, too many projects, and too much content. It's all these things clashing – sometimes like an orchestra without a conductor.*
>
> "Information Overload: We Have Met the Enemy and He Is Us," Jonathan B. Spira, David M. Goldes, March 2007

At present, every day is a struggle for knowledge workers. To deal with the tsunami of information, they need more than a set of actions on a task list – they need a *new form of desktop* that groups *all* their computing resources (documents, links, programs, and so on) by work process. This, rather than a set of task lists, is the structure that knowledge workers need to transform information from wasteful distraction into useful knowledge.

Worldwide recession

For some time analysts have been predicting a worldwide recession, triggered by

- Crisis in the US housing market
- Rising oil and food prices
- Consequent devaluation of the dollar

As a result, organizations of all kinds will need to cut costs in order to stay afloat. In particular, they will seek to streamline their business processes.

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In the first instance, organizations will address business processes that are routinized, using software solutions for workflow (including BPM Systems). This technology is now becoming ubiquitous, with the incorporation of workflow and BPMS features into platform solutions from major software vendors such as Microsoft, Oracle, IBM, and SAP. In others words, software support for routinized business processes is now a mainstream, institutionalized part of business life.

This means that in due course most organizations will achieve a similar level of efficiency in their routinized business processes – i.e., improving and (semi-) automating these processes will be the norm, rather than providing any competitive advantage. Analysts have been warning for years that something else is needed in order to deliver business advantage.

> *Research house Butler Group issued a stark warning last year that BPM is dramatically over-hyped and will often fail to meet ROI estimates from vendors. "Whatever the size and scale of the BPM implementation, companies are advised not to believe vendor hype and be prepared for little or no ROI," the analyst warned. "The main area of benefit is BPM's ability to increase the efficiency of a core business process. However, in reality, most processes have already been made efficient over time."*
>
> "Making a Business Case for BPM," Computer Business Review, November 2005

The major BPM software vendors are now well aware of this need:

> *Today, BPM is really focused on making people productive because most transaction automation has already occurred in previous decades.*
>
> "BPM Themes For 2008," Jim Sinur, Chief Strategy Officer, Global 360, January 2008

Yet analysts are still vocal in demanding new technology:

> *There are two classes of processes – task-driven and human-driven. Task-driven processes define and/or describe how tasks get done, often by IT systems and resources, while human-driven processes define and/or describe how people do things. Both are essential to successful business operations. However, they are very different from one another, and cannot be equally effectively addressed by any common set of processes or technologies.*
>
> "BPM, BKM, and the Seven Ps: Processes," Michael Dortch, Aberdeen Group, April 2007

As the Chair of the Workflow Management Coalition warns, "A*ny [workflow or BPMS products] that have been in the market for longer than five years will need radical surgery to meet the coming challenge*":

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> *Process-based technology that understands the needs of people and supports the inherent "spontaneity" of the human mind is the next logical step, and we might be tempted to name this potential paradigm shift "Knowledge Intensive Business Processes." KIBPM falls into two main categories, which will probably merge over time, and the vendor that recognizes that potential will steal a march on the others. At the simplest level we have case management, and secondly, we have Human Interaction Management. I doubt there are many BPM products on the market today which will be able to meet this seismic shift in requirements – certainly those that rely on BPEL and SOA won't; what's more, any that have been in the market for longer than five years will need radical surgery to meet the coming challenge.*
>
> "Why Workflow Sucks," Jon Pyke, Chair of the Workflow Management Coalition, November 2006

Although the vendors recognize the need, they are still trying to fob off their customers with old technology that is based on a different and inappropriate paradigm. As described above, all workflow and BPM software makes the assumption that work can be defined via a set of tasks. However, this is not the nature of knowledge work! Rather, one needs to start by defining **goals**, **responsibilities**, and **commitments**. Only then can the software support collaborative, adaptive, innovative behavior throughout the life of the process.

Further, the collaboration inherent in knowledge work often spans organizational boundaries, and, in many cases it is not clear who should "own" the process. Hence, it is necessary to support a **peer-to-peer** mode of process participation so that there is no need for central hosting, and each party can maintain their own personal workspace if desired:

> *Speaking of business processes, when humans are involved, it makes very little sense to have a centralized, computer-based system coordinating business processes on behalf of humans.*
>
> "The Human in the Machine," ZapThink, January 2006

The way forward for knowledge work

To meet these needs, knowledge workers seek software tools that are not a programmer's solution driven by technology, but a business solution based on a robust underpinning theory that goes beyond a narrow-minded focus on tasks. The theory required is **Human Interaction Management** (**HIM**).[2]

To illustrate the deficiencies of software based purely on the definition of tasks, consider a harsh but almost ubiquitous reality of the modern workplace: that people are often hired purely for their mental qualities (analytical faculty, strategic skill, creative ability, and so on) then penalized for using them.

In most workplaces, there is a general perception that managers judge time spent "just" thinking as time wasted. Whether or not managers *actually* think this is almost beside the point! The workplace culture is such that people feel they have to "look busy," which often means sacrificing the valuable thought they could be putting into their work for the sake of filler activities whose outputs can at least be measured.

Of course, many managers are sensible enough to understand that their staff are not always daydreaming when they sit staring at the wall. However, without a simple and effective means of planning, supporting, and measuring mental work, managers are caught in something of a double bind. This is captured perfectly by an old cartoon in which two managers of the Acme Soap

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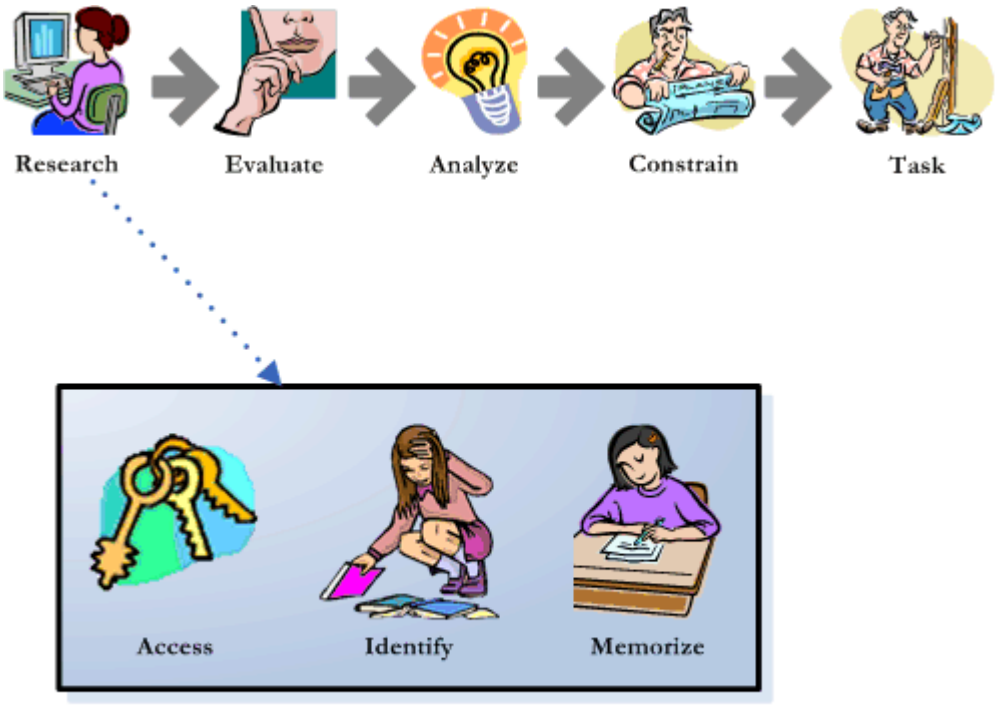
Company walk past the open door of an office in which a man is sitting with his legs up on his desk, staring out of the window. "That's Jones," says one manager to the other, "one of our best thinkers." "Yes", says the other manager, "but how do we know he's thinking about soap?"

HIM helps deal with this problem, by explicitly recognizing the need to support mental work as the third of its 5 basic principles:

> *Organizations must learn to manage the time and mental effort their staff invest in researching, comparing, considering, deciding, and generally turning information into knowledge and ideas.*

HIM sets out a notation including the necessary elements to support its principles, and provides guidelines on use of this notation by identifying a number of patterns characteristic of human work. Of particular relevance to mental work are the REACT pattern and its sub-pattern AIM:



The REACT and AIM patterns of Human Interaction Management
More information: http://human-interaction-management.info

Discussing the stages of REACT in turn:

1. **Research**
   Map out the terrain, investigate the principles, talk to those in the know, locate potential threats, and so on, in order to gain information from external sources, and turn it into personal knowledge. The external sources may be close at hand - members of a "community of practice," for example, as discussed below. Alternatively, information may be acquired from an impartial expert in the field, a textbook, or a search on the Web. The details are different every time, but the principle is the same. Before you can start to work on something, it is only common sense to find out what you are getting yourself into.

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2. **Evaluate**
   Step back and consider the knowledge thus acquired. Internalize it, in a sense, by making connections between different opinions or facts. Once you have discovered the general lay of the land, you then need to familiarize yourself with it. You may need to carefully read a pile of papers on your desk, or to mull over some advice that you don't yet understand. This stage may take minutes or years, but it is crucial – There is no point doing an investigation unless you make an effort to take on board the information you gathered.
3. **Analyze**
   On the basis of your new-found understanding, decide on an approach to the problem. In general, the approach you settle on may result partly from applying logic to reduce the problem to more manageable sub-problems – and partly from an intuitive judgment on what feels "right." The balance varies, both with the type of problem and with the type of person trying to solve it. However you arrive at a conclusion, though, the decisions made at this stage are not necessarily a final say on the matter; they are simply a way forward for now – enough to let you proceed further with the work in hand. Sometimes it is hard to be sure whether you are doing the right thing, so you might choose a way forward that hedges your bets – following multiple paths at the same time, in the hope that at least one will work – or you may decide only on the first few steps, and leave decisions about other steps for later. But you have to make some kind of decision at this point, at least on how to start.
4. **Constrain**
   Divide the work into separate chunks, and organize them. This may be simply a matter of deciding an approximate order to do them in, or it may be a huge task involving all the techniques of project planning: dependency and impact analysis, critical path definition, resource allocation, budgeting, contingency planning, and so on. However, you are dealing with human-driven processes here – in which people rarely do things in the order laid down and rightly see it as part of their work to determine how things should proceed. So this stage is not about defining "workflows," in the sense of ordering activities into strict sequence; it is about laying down the constraints that govern the chunks of work, insofar as they can be understood at this point. Typically, constraints are of rather vague form: "before you can promise a delivery date for a product, make sure the component suppliers can meet it," or "It is okay in principle to take on contract staff, as long as you've made a reasonable effort to resource the project internally first."
5. **Task**
   You have determined how to break the work into chunks, and handed out these chunks to appropriate people (including yourself, perhaps), so now all those concerned can get on with the tasks at hand. For a small job there might only be one chunk, and you might do it yourself. For a large one, this stage may involve many different people and organizations working together to deliver a product or service.

Of the 5 stages of REACT, the first 3 are entirely mental. The first stage of REACT, Research, can be further broken down into a sub-pattern AIM, which describes any research activity:

1. **Access** discovery services.
   Decide where you will go to obtain information, and obtain any necessary authorization. This might be permission to contact someone, login details for a database, or funds to use some kind of finder agency.
2. **Identify** resources required.
   From the service(s) above, choose resources likely to be of interest. At this stage, you will have only cursory understanding of their content – what matters is that they seem likely to be useful.
3. **Memorize** information obtained from particular resources.
   It is important to focus on committing information to memory, even if the information is

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only the outline of an idea you will use later on. Unless you have memorized information gathered, you cannot synthesize ideas you have forgotten, or that you need to look up in order to understand. This stage is all about internalizing the ideas in question.

Similarly to the way REACT describes human work in general, AIM describes the particular activities of information discovery.

Taken together, the REACT and AIM patterns describe all human working behavior. The patterns capture the way that people respond to an assignment, fulfill a responsibility, achieve a goal – the way they react to the work they take on. REACT and AIM help simplify complex situations since the patterns can be repeated, overlapped, and nested in order to reduce any work assignment to the same fundamental stages.

It should be clear by now that the mental work described by REACT and AIM is vitally important to the success of knowledge work, yet finds no place in mainstream BPM software (human-centric or otherwise). To support mental work, you need a HIMS, not a BPMS.

TAKE AWAY: Getting the best from knowledge work

For many organizations, one of their highest costs is their knowledge workers – for which I prefer the term **interaction workers** to indicate the degree to which knowledge work is dependent on collaboration. Yet such work is usually poorly managed in that little or no place is formally allowed for the mental activities of which it consists. Managers plan and measure on the basis of concrete outputs, not mental inputs.

To get value for money from your interaction workers, this has to change. Adopt HIM principles and give your interaction workers the space to do what they do best! The first step is to plan and execute human-driven business processes using a HIMS such as the free **HumanEdj**.[3] However, this is only the beginning.

Once work processes have been put in place that actually reflect what people are trying to achieve, managers can then start doing their real job, which is to support the efforts of their staff by enhancing their workplace environment. For instance, new and interesting software tools are emerging to support the process of information discovery – finding, assembling, and writing up information in order to transform it first into knowledge and subsequently into decisions. These tools often emerge from academia, but are highly relevant to a world in which Google is everyone's de facto home page.

Wikipedia provides a useful comparison of reference management software.[4] My personal favorite is Zotero,[5] which is free and so easy to use that I can see it dominating the space before very long.

Give your interaction workers what they need to do knowledge work properly:

- Processes that allow for the human-driven nature of knowledge work;
- Tools that help them deal with the information tsunami; and, most important of all,
- Official recognition for the effort they put in with their minds, as well as with their hands.

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Author

Keith Harrison-Broninski is a consultant, writer, researcher, and software developer working at the forefront of the IT and business worlds. He is author of the landmark book, ***Human Interactions: The Heart And Soul Of Business Process Management*** (Meghan-Kiffer Press, 2005)[6], described by a BPTrends review as *"the overarching framework for 21st century business technology,"* and by the BPM Group as *"a must read for Process Professionals and Systems Analysts alike."* Keith is also a contributing "thought leader" to the BPM Group book "In Search Of BPM Excellence" (Meghan-Kiffer Press, 2005)[7].

Along with his research and consulting work, Keith is the CTO of Role Modellers Ltd, whose company mission is to develop understanding and support of collaborative human work processes across industry, a field that Keith has pioneered with his work on Human Interaction Management.[8] Role Modellers' free software, HumanEdj, is the reference implementation of a Human Interaction Management System.

Find out more about Keith and his work at http://keith.harrison-broninski.info.

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[1] "The Cost of Not Paying Attention: How Interruptions Impact Knowledge Worker Productivity", Jonathan B. Spira, Joshua B. Feintuch, September 2005, basex.com

[2] human-interaction-management.info

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[4] en.wikipedia.org/wiki/Comparison_of_reference_management_software

[5] zotero.org

[6] mkpress.com/hi

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[8] human-interaction-management.info

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